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FILED
10/25/18
02:54 PM

APPENDIX A

ASSESSMENT OF PACIFIC GAS AND ELECTRIC CORPORATION AND PACIFIC GAS AND ELECTRIC COMPANY'S SAFETY CULTURE

PREPARED FOR
CALIFORNIA PUBLIC UTILITIES COMMISSION
MAY 8, 2017

FINAL REPORT

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CHAPTER I: EXECUTIVE SUMMARY

On August 27, 2015, the California Public Utilities Commission (CPUC or Commission) opened an investigation to determine whether Pacific Gas and Electric Company's (PG&E) and PG&E Corporation's (PG&E Corp.) organizational culture and governance prioritize safety and adequately direct resources to promote accountability and achieve safety goals and standards (I.15-08-019 *Order Instituting Investigation to Determine Whether PG&E and PG&E Corporation's Organizational Culture and Governance Prioritize Safety* (Safety Culture Investigation or OII)). During the first phase of the proceeding, the Commission directed the Commission's Safety and Enforcement Division (SED) to evaluate PG&E's and PG&E Corp.'s organizational culture, governance, policies, practices, and accountability metrics in relation to PG&E's record of operations, including its record of safety incidents, and to produce a report on the issues and questions contained in the OII.

NorthStar Consulting Group, Inc. (NorthStar) was selected to perform the assessment. The review began in April 2016. Detailed fieldwork was conducted from May through December 2016. On December 30, 2016, PG&E provided NorthStar with a detailed "whitepaper" describing the safety-related activities that it had undertaken since San Bruno. During the course of the investigation, NorthStar reviewed the responses to nearly 900 information requests and conducted more than 250 interviews. A number of the interviews were field visits which resulted in discussions with more than one employee.

A. SUMMARY

While PG&E is committed to safety and efforts have been made to reduce incidents and increase the organizational focus on safety, these efforts have been somewhat reactionary — driven by immediate needs and an understandable sense of urgency, rather than a comprehensive enterprise-wide approach to addressing safety. PG&E moved quickly to address the issues with its gas system surfaced by San Bruno, but was slower in addressing its safety culture. As a result, the extent to which the desired culture is embedded in the organization varies among lines of business (LOB) and other organizations, and between the corporate offices and the field. Gas Operations and Power Generation have more robust implementation than Electric Transmission & Distribution (Electric T&D). PG&E has placed considerable emphasis on changing the culture of management personnel and this is evident in the corporate offices. Field personnel generally believe management is committed to safety, but in many respects it is business as usual in the field, or the field locations are working to address safety issues on their own.

With the exception of the change in the discipline policy and its efforts to foster a "speak up" environment, PG&E has only recently begun to address safety culture on an enterprise-wide basis. The absence of a comprehensive strategy has resulted in the lack of coordination between corporate safety and the field functions and the introduction of numerous initiatives aimed at improving safety without a coordinated approach. Initiatives driven by the field or lessons learned within an LOB are not adequately transmitted across the organization to maximize the benefit of internal best practices. Delays in the development or

implementation of a plan have been exacerbated by the two-president model, line of business silos, the lack of management personnel with safety experience, re-organization and considerable turnover within corporate safety, and the lack of a comprehensive understanding of the issues and underlying causes.

B. BACKGROUND

On September 9, 2010, at approximately 6:11 P.M., a portion of PG&E's 30-inch diameter underground natural gas transmission system (Line 132) suddenly ruptured. Operating at approximately 386 pounds per square inch gauge (psig), the pipeline was located under the asphalt paving at the intersection of Glenview Drive and Earl Avenue in a residential area of San Bruno, California. Installed in 1956, the 28-foot long section of Segment 180 Line 132 that failed consisted of five segments which were propelled into the air and landed about 100 feet away. An explosion ensued, fueled by blowing natural gas. The explosion and fire resulted in the loss of eight lives and the total destruction of 38 homes. Sixty-six people were injured.[1] Seventy homes sustained damage and eighteen homes adjacent to the destroyed dwellings were left uninhabitable.[2]

On September 23, 2010, the CPUC approved Resolution No. L-403, which included the formation of an Independent Review Panel (IRP) of experts. The IRP's purpose was to gather and review facts and make recommendations to the CPUC for the improvement of the safe management of PG&E's natural gas transmission lines.

On June 24, 2011, the IRP issued its report, citing a "dysfunctional culture" at PG&E in which the goals of its enterprise risk management process were disconnected from the reality, decisions, and actions throughout the company. "…[PG&E] management made a faulty assumption. It did not make the connection among its high level goals, its enterprise risk management process and the work that was actually going on in the company."[3] The IRP Report determined, "this failing is a product of the culture of the company – a culture whose rhetoric does not match its practices."[4] This dysfunctional culture, the IRP Report concluded, appeared based on excessive levels of management, inconsistent presence of subject matter expertise in the management ranks, an appearance-led strategy setting, an insularity that impeded its ability to judge its effectiveness, and an overemphasis on financial performance. The IRP also cited a lack of "process excellence," which was explained as a failure of communication resulting from siloed, or segregated, business enterprises that should have, but failed to, communicate with each other. Importantly, the IRP indicates that PG&E's culture failed to explain and acculturate the live link that must be maintained between the executive, management, and field operations ranks; between individuals and

[1] http://abc7news.com/news/san-bruno-residents-remember-those-killed-in-pipeline-explosion/302058/

[2] June 24, 2011, Report of the Independent Review Panel San Bruno, prepared for the California Public Utilities Commission.

[3] *Report of the Independent Review Panel – San Bruno Explosion – Prepared for the California Public Utilities Commission*, June 24, 2011 (IRP Report) at 16

[4] *Report of the Independent Review Panel – San Bruno Explosion – Prepared for the California Public Utilities Commission*, June 24, 2011 (IRP Report) at 16

their actions; between divisions and subdivisions; and between processes, functions, and overarching safety goals.[5]

On August 30, 2011, the NTSB issued its Accident Report investigating the San Bruno explosion and fire, which identified specific violations that led directly to that event. Many of those specific violations were also the subject of the Commission's San Bruno Investigations. The NTSB spoke of a deeper failure underlying the specific violations, which made the San Bruno event an "organizational accident."

C. Safety and Culture

An organization's culture is the collective set of that organization's values, principles, beliefs, and norms, which are manifested in the planning, behaviors, and actions of all individuals leading and associated with the organization, and where the effectiveness of the culture is judged and measured by the organization's performance and results.

A strong safety culture requires commitment and accountability throughout an organization. A company's leadership and executive management must display a positive commitment to safety that is recognized throughout the organization. This commitment must be evident in the actions of management and the support they provide to the workforce. The organization must provide its people with the tools, resources, training and oversight necessary to ensure safe operations. Rules and requirements must be clear and consistent. Management must take a thoughtful approach to incidents and the implementation of new rules and standards. Employees should feel accountable for their own safety and the safety of their co-workers. They should feel comfortable stopping work during unsafe conditions or stepping in if they see another employee placing themselves, others or the public at risk. Employees should feel comfortable reporting potential hazards and incidents without fear of retribution as these can provide valuable lessons learned to improve safety practices. Disciplinary procedures should be consistently applied, recognizing the difference between human error, process defects, insufficient controls and a wanton disregard for safety rules.

As defined in the OII, a positive safety culture includes, among other things:[6]

- A clearly articulated set of principles and values with a clear expectation of full compliance.
- Effective communication and continuous education and testing. "Employees will do it right sometimes if they know how. They're more likely to do it right every time if they fully understand why."
- Uniform compliance by every individual in the organization, with effective safety metrics, recognition, and compensation, and consequences or accountability for deviating or performing at, above, or below the standard of compliance.
- Continuous reassessment of hazards and reevaluation of norms and practices.

[5] I.15-08-019
[6] I.15-08-09, pp 5-6

The success of a safety culture depends on *leadership* committed to making safety its first priority. This is particularly true in companies such as utilities where there are many layers of employees. The commitment to safety must extend to every employee and contractor of the organization, with consistent execution of the principles, values, and norms to foster a strong safety culture.

D. SCOPE AND OBJECTIVES

Previous analyses of PG&E's safety record and management focused on specific areas. The NTSB focused on PG&E's design, operation and maintenance of its gas transmission and distribution activities and policies.[7] The IRP's central focus was PG&E's pipeline integrity management, but it expanded its scope to address such areas as emergency response and company culture.[8]

The objective of this safety culture investigation is to review the principles, values, qualities, factors, and metrics used to define, promote, and measure the effectiveness of PG&E's safety culture. In I.15-08-019, the Commission posed the following questions:

- Do PG&E's organizational failures cited by the NTSB continue?
- Does PG&E's progress suffer from impediments to process excellence within the control of the company?
- Is PG&E presently undergoing improvement with optimal risk management and strategic planning?
- Is PG&E designing accountability metrics and measures to achieve a high-functioning safety culture?
- Is PG&E realizing improvement with sufficient speed and deliberation?
- Why are the traditional tools of enforcement not working to prevent safety incidents and promote a high-functioning safety culture?
- Are the improvements PG&E has made (i.e., organizational changes) as widespread and deep as are necessary for a long-lasting and sustainable safety culture?
- What additional actions can the Commission order or promote to realize a high-functioning safety culture at PG&E?

NorthStar's review focused on the activities of Gas Operations, Electric T&D, Power Generation and Corporate Safety. Nuclear was not specifically a focus of this review; however, this review did consider best practices in the nuclear organization that could be transferred or adopted throughout the organization. Similarly, NorthStar's review did not focus on issues of environmental compliance and remediation or industrial hygiene. As

[7] NTSB report
[8] IRP report

stated by the Commission, NorthStar's investigation is not a duplicative review of enforcement actions concerning specific incidents already investigated or that are pending investigation at the Commission. This investigation instead conducts a deeper review of PG&E's and PG&E Corp.'s organizational culture, governance, and operations, and the systemic issues identified by the NTSB. According to the OII, the investigation should begin with what the Commission, customers, and the public should expect from PG&E when the State awarded PG&E its franchise and approved PG&E's rates. To answer this question, the investigation should examine PG&E's budgets, operational requirements, staffing, and approved revenue requirements and recorded spending in past years.

As NorthStar was not at PG&E prior to or immediately following San Bruno, it does not have first-hand knowledge of the safety culture and attitudes of the employees, management and the Board of Directors (Board or BOD) at that time. To assess changes in PG&E's safety culture, NorthStar relied on contemporaneous documentation (such as the IRP report, other consultant reviews and reports by external parties); policies, practices and procedures; trend information and other data regarding safety performance or priorities; meeting minutes and executive actions; interviews with personnel who have been in place since or prior to San Bruno; the impressions of individuals who were newer to the organization; and NorthStar's professional experience. NorthStar's assessment is largely based on PG&E's current safety culture.

PG&E has taken a number of steps following San Bruno to improve the safety of its infrastructure, the public and its employees. **Attachment 1** details some of the changes since San Bruno. PG&E made additional improvements during the course of NorthStar's investigation; however, more improvements are warranted. PG&E recognizes that there is additional work to be done, and that its focus on safety must never end. Culture change takes time and commitment. NorthStar's conclusions and recommendations are made with this intent — to assist PG&E and the CPUC in continuing to improve PG&E's safety culture.

At PG&E, the primary responsibility for safety rests with the various LOBs, in particular Gas Operation, Electric T&D, and Power Generation. Ultimately, responsibility rests with each employee to be accountable for his/her own safety and the safety of co-workers and the public. To achieve a unified culture at any large organization is challenging. Culture is driven by management commitment; the behavior and personality of an employee's immediate supervisors and co-workers; and, to a lesser extent by "corporate speak." The specific challenges and risks faced by gas operations, electric operations, other field operations and the various generating stations differ from each other and from those faced by corporate office workers. Maintenance and construction activities and associated risks differ between the LOBs. Hydro generation differs in many respects from fossil generation and from the risks associated with nuclear power. PG&E operates in a diverse, expansive service territory. Some of the facilities are remote, with minimal connection to the activities in downtown San Francisco. One should not expect precisely the same culture in each office, district or division. However, basic cultural tenets should be consistent throughout the organization.

PG&E made two significant changes in the early years following San Bruno to drive improvements in the safety culture: 1) the modification to its discipline policies and, 2) the emphasis on speaking up for safety.

In May 2012, PG&E developed a behavior-based approach to discipline, replacing its previous matrix-driven approach to determining the level of discipline for various safety infractions. Previously an employee may have been fired for a violation of safety rules or a safety incident. With the change in policy, discipline following safety incidents or accidents was to be used only as a last resort. In order to remove any perception of punitive action, PG&E began referring to the discussion between an employee involved in a safety incident and his/her supervisor, as a "Safety Discussion."

Consistent with the change in the discipline policy, PG&E began encouraging management and employees to report safety issues and to have open dialogue regarding potential safety concerns. Ultimately this led to a number of initiatives. In February 2014, PG&E and the IBEW signed a Letter of Agreement related to the sharing and reporting of near hits (incidents where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage and/or injury easily could have occurred). According to the employee announcement: "This agreement reinforces PG&E's commitment to foster a culture of trust an open dialogue in which near hits can be openly shared without the use of disciplinary action. This is a significant change from past practices and one we wholeheartedly believe is the right approach in order for us to build a safety-first culture."[9] PG&E also launched a training program to foster a more open environment in which employees would feel comfortable speaking up and placing safety first.

E. KEY CONCLUSIONS

Conclusions with broader organizational implications are highlighted in this chapter. Conclusions in all scope areas are detailed in the subsequent chapters of this report.

1. PG&E employees at all levels are committed to safety.

Throughout the course of the review, NorthStar was allowed unfettered access to PG&E personnel and executive management meetings and processes. This included attendance at Board committee meetings, executive management meetings and internal self-assessments. Employees were encouraged to be candid with NorthStar, and NorthStar believes for the most part that this occurred. PG&E immediately notified NorthStar in the event of a serious incident or a compliance violation which required self-reporting to the CPUC. Some of these may have ended up in fines. NorthStar believes this speaks positively to the issue of PG&E's safety culture, its willingness to accept potentially negative findings and its desire to improve. NorthStar believes PG&E executive management is committed to safety. NorthStar observed a similar to commitment to safety among the field employees. No one desires to be unsafe.

[9] DR 66 attachment 40

2. **The dual-president model in place for most of NorthStar's review, is not typical of the industry and does not promote the "One PG&E" focus. Regarding safety, PG&E continues to maintain a strong LOB, rather than enterprise-wide focus.**

On August 17, 2015, following Chris Johns retirement as President of the utility, PG&E separated the roles of electric and gas operations, appointing Ms. Geisha Williams as President, Electric Operations and Mr. Nick Stavropoulos as President, Gas Operations. While this may have been beneficial from a succession planning standpoint, it was not consistent with a unified company focus.

On November 14, 2016, PG&E announced that the PG&E Corp. BOD had elected Ms. Williams as the Chief Executive Officer (CEO) and President of PG&E Corporation and Mr. Stavropoulos as President and Chief Operations Officer (COO) of the Utility, effective March 1, 2017. NorthStar is hopeful that the March 1, 2017, re-consolidation of the roles of president of the gas and electric businesses into a single utility president role will help foster a more consistent and inclusive approach to safety.

3. **Corporate Safety's organizational placement prior to March 1, 2017, did not send a strong message about PG&E's commitment to safety. Additionally, the Lead Safety Officer in place until March 1, 2017, did not possess significant operational or safety credentials.**

During the course of its review, NorthStar expressed concern that Corporate Safety was buried within the organization and was not led by individuals with strong safety credentials. The Safety organization and the Lead Safety Officer should have reported much higher in the organization, if for no reason other than to send a strong message about Executive Management's commitment to safety. Until NorthStar's review, Corporate Safety was part of the Safety and Shared Services (S&SS) organization which reported to Gas Operations. NorthStar recommended that this organization should report to the Utility President and be staffed with experienced safety personnel. NorthStar also expressed concern that the inclusion of the Environmental function within Safety and Health served to detract from the focus on public and employee safety. NorthStar recommended that the Lead Safety Officer also have a reporting relationship to the Nuclear, Operations and Safety (NOS) Committee of the Board, similar the relationship of an entity's Internal Audit function to the Audit Committee of the Board.

For the most part this recommendation has been adopted. Following the return to a one-president structure in November 2016 (effective March 1, 2017), PG&E split Environmental from Safety and Health, and removed Safety and Health from the Shared Services organization, instead having it report to the President and COO of the utility with a reporting relationship to the NOS Committee. PG&E selected a new Vice President of Safety and Health with operational experience to serve as the Lead Safety Officer and hired an experienced Senior Director of Safety and Health.

4. **Current safety culture efforts are disjointed and not part of a comprehensive, company-wide health and safety plan.**

The need for a safety culture strategy was identified as early as 2010. PG&E changed its discipline policy, launched leadership training classes, and encouraged employees to "speak up," but it did not develop a comprehensive strategy. Each of the LOBs has its own safety plan. Gas Operations has a Gas Safety Excellence Plan; Electric T&D created an Electric Operations Improvement Plan; and, Power Generation developed its own safety culture strategy. Corporate Safety manages the utility's health and wellness programs and a number of cultural initiatives. Corporate Safety's "plan" consists of six elements which shift and evolve based on timing and feasibility. The earliest iteration of Corporate Safety's Safety Culture Roadmap is from mid-2014.

While each LOB implemented various programs and initiatives to improve safety, they were not part of a comprehensive corporate-wide plan, which encompasses all aspects of safety and which clearly defined the roles and responsibilities and inter-relationships between the LOBs and the Corporate Safety function. As a result, PG&E was slow in addressing some of the cultural issues. The lack of a comprehensive plan also creates the potential for differing messages and inconsistent communication. NorthStar believes PG&E felt considerable pressure to improve performance following San Bruno and launched a number of initiatives aimed at improving safety without sufficient consideration of the potential impact on the workforce or its ability to determine the effectiveness of individual campaigns.

5. **Historically, the respective roles and responsibilities of corporate safety and the LOBs have been ill-defined. NorthStar believes the significant turnover in the Corporate Safety organization has also contributed to delays in addressing safety culture and the development of a holistic approach to safety.**

6. **PG&E has made positive strides in embedding a safety consciousness throughout the workforce; however, a cultural divide still exists between corporate and the field.**

PG&E has made progress in improving its safety culture; however, the pace could be improved. The speed of change has been affected by internal blind spots, organizational issues and communication challenges. Management bandwidth issues may also play a role. Despite NorthStar's concerns regarding the potential pace of change, there is a need in some areas to pause, recognize that change does not happen overnight, evaluate the effectiveness of initiatives currently underway and develop a comprehensive and robust plan for continuing to improve the safety culture throughout the organization.

7. **PG&E has placed a heavy emphasis on training to improve safety performance and promote a positive safety culture. Many of these programs are good; however, the sequence and timing of training means crew foreman safety training may not be complete until 2019.**

Since San Bruno, PG&E has delivered two enterprise-wide safety culture leadership training programs. The first program, conducted primarily in 2012 and 2013, was a one-day

Safety Leadership Workshop delivered to over 4,500 PG&E leaders from crew foremen to the CEO. It provided a good foundation for the development of an improved safety culture. The second safety culture leadership training program, the Safety Leadership Development Program, consisted of a series of six workshops delivered between 2014 and 2016. This workshop training should have positive impact on safety culture, but it was not given to crew foremen. PG&E plans to implement a safety training program for crew leaders in 2017, but the training will not be complete until the end of 2019.

8. There is insufficient company-wide communication regarding PG&E's safety culture strategy.

There is limited company-wide communication regarding PG&E's overall safety culture strategy. PG&E's primary approach to first communicating its post–San Bruno approach to safety was through the Safety Leadership Workshops in 2012 to 2014, and the leaders' follow-up discussions with employees. Although not part of a specific or unified campaign, the overarching message PG&E has been striving to instill in its workforce is that nothing is more important than safety and employees should "speak-up" where safety is concerned. PG&E has made significant strides in this area; however, this belief is not yet firmly and fully entrenched within the organization. The need to improve the "speak up" culture was identified in 2012 and 2014 surveys, but the PG&E did not implement a "Speak Up" campaign until fall 2016.

There are also indications that corrective actions related to incident investigations may not be shared with other LOBs on a timely basis or may be "lost" amongst the many other communications. PG&E recently replaced Electric T&D's Rapid Incident Notification System (RINS) with other systems. RINS gave Electric Supervisors a daily summary of safety incidents and outages from the previous day. It is too soon to predict the impact this may have on the field.

9. The Integrated Planning Process (IPP) has had a positive impact on the safety culture of PG&E since its introduction in 2012, but is not a replacement for a comprehensive integrated Utility Safety Plan.

The IPP involves a large number of employees on an almost continual basis throughout the year. Senior executives are a highly visible part of the process, indicating its importance. Each of the four sessions of the process requires employees and managers to consider and evaluate projects and initiatives that affect safety. Unfortunately, safety is not separated or differentiated from reliability and integrity. While reliability and integrity can often be linked to safety, they are not always the same thing as safety. Both PG&E and the CPUC are working to improve the focus on safety separate from reliability and integrity.

F. CRITICAL RECOMMENDATIONS

The following provides NorthStar's most critical recommendations for PG&E and the Commission.

- Development of an implementation plan for NorthStar's recommendations, to be submitted to the CPUC. PG&E should also provide periodic updates on its implementation status. This information shall be used by SED to ensure timely and effective implementation of NorthStar's recommendations.

- The need for clear definition of supervisory requirements, including an assessment of workload requirements, ongoing field monitoring efforts and time requirements, and associated staffing levels.

- Expedited completion of the safety leadership training for crew leads and foremen.

- Development of a comprehensive safety strategy, with associated timelines/ deliverables, resource requirements and budgets, personnel qualifications, clear delineation of roles and responsibilities; action plans, assignment of responsibility for initiatives, and associated metrics to assess effectiveness. This should be followed with the identification of necessary corporate and LOB safety resource requirements and development of an appropriate organization structure. Also shared with SED

- Greater coordination among the LOBs and with Corporate Safety to increase consistency, improve efficiencies, minimize operational gaps, and facilitate sharing of best practices.

- Meaningful, consistent routine reporting of safety performance and metrics to the CPUC (all major California Investor-Owned Utilities (IOUs)).

- A non-punitive system for reporting actual and potential safety incidents to the CPUC to encourage reporting and facilitate lessons learned sharing among all California utilities. To the extent that the utilities are made aware of incidents or potential incidents in other states this information could also be shared.

- A Performance-Based Ratemaking (PBR) mechanism that includes a safety element to be considered in the rate design phase of the TY2017 PG&E General Rate Case (A. 15-09-011). The PBR mechanism should include a traditional rate of return component and a variable safety-related component based on pre-defined criteria and the discretion of the CPUC.

G. RECOMMENDATIONS FOR PG&E

Exhibit I-1 provides a summary list of the recommendations contained throughout the report. Additional detail on the recommendations is provided in the individual chapters. Exhibit I-1 provides NorthStar's assessment as to the priority of each recommendation (high, medium, low) and the potential cost/ease of implementation. Implementation is ranked using

an A, B, C scale, with A representing those initiatives that are relatively easy to implement and lower cost, and C representing those initiatives that are more difficult to implement or higher cost.

Exhibit I-1
Summary of Recommendations

A=Easy to implement/Low cost
B= Harder to implement/Higher cost
C=More difficult to implement or high cost

Recommendation		Priority	Ease of Implem./ Cost	In Process?
Governance and Strategy				
III-1	Add safety to the list of qualifications used in selecting Independent Directors to the Board(s) of PG&E Corp. and PG&E. Periodically revisit the qualifications matrix and requirements for Independent Director as the industry and requirements change. Add Independent Directors to the Board who have experience with safety, perhaps in another industry such as aviation.	High	A	
III-2	Reassess and stabilize the safety culture change initiatives. The rigor applied to the integrated planning process (discussed in **Chapter VI: Budgeting and Spending**) should be applied to safety culture. The overwhelming number of initiatives and constant shifting of priorities is detrimental to a stable, consistent safety culture.	High	B	
III-3	Develop a comprehensive safety plan (by the end of 2017) that incorporates LOB and Corporate Safety activities to eliminate duplication, prevent gaps and appropriately prioritize expenditures. The plan should address culture, employee health and wellness, contractor safety, employee safety and public safety. Solicit input from throughout the organization, particularly the field, in the development of the plan. The environmental function was removed for the Safety, Health & Environment organization. It should have its own plan The plan should be updated annually for at least two years and then at least every three years thereafter, with quarterly/annual monitoring of progress relative to the plan. The comprehensive plan should include all safety plans and programs of the Company, except for specific asset-related safety plans (such as asset management plans, leak survey programs or vegetation management) that should continue to be the responsibility of the various LOBs. The plan should be approved by the NOS Committee and the Boards, and endorsed and supported by executive management and the CPUC. The plan must be clearly communicated throughout the organization.	High	B	Plan in process. NorthStar does not know details of the plan or its comprehen-siveness
III-4	Clearly define and articulate any new initiatives to improve safety culture. Perform cost-benefit analyses of these initiatives and identify performance measures. Corporate Safety recently produced an analysis of lost work days that might serve as a starting point for the thought process and analytics involved.	Medium	B	
III-5	Internal Audit should play a more active role in auditing safety controls, programs and processes.	High	A	
Organization				
IV-1	Appoint a Corporate Safety Officer who has both operations and professional safety experience. NorthStar is aware that Mr. Higgins replaced Mr. Bell as Corporate Safety Officer on March 1, 2017. While Mr. Higgins has operating experience with National Grid, PG&E and other utilities, he does not have professional safety training or experience. Mr. Higgins should undertake a professional training program that will provide him with the necessary skills as soon as possible.	High	A	New officer appointed
IV-2	The Corporate Safety Officer should report to the COO of the Utility and to the NOS Committee of the Board in the same manner that the head of Internal Audit reports to the Audit Committee of the Board in most public companies. (It is NorthStar's understanding that this has been implemented.)	High	A	Complete

A=Easy to implement/Low cost B= Harder to implement/Higher cost C=More difficult to implement or high cost				
Recommendation		**Priority**	**Ease of Implem./ Cost**	**In Process?**
IV-3	Examine workload levels, potential morale issues and other demands to understand and mitigate the reasons for the high turn-over at the Sr. Director, Safety and Health position and throughout the Corporate Safety organization.	High	B	
IV-4	Following the development of the safety strategy, review the structure, reporting relationships and staffing levels of the Corporate Safety organization to ensure PG&E has the resources necessary for strategy execution and proper coordination with/support for the LOBs.	High	B	
IV-5	Improve the safety credentials of personnel in PG&E's safety functions and organizations.	High	B	
IV-6	Simplify and clarify the roles and responsibilities of the Corporate Field Safety Specialists (FSS) vis-à-vis the LOB FSS to eliminate duplication, and align activities with the respective skill sets. Work with the LOBs to determine service levels and staffing requirements.	High	A	Portions in process
IV-7	Establish, and adhere to, minimum qualifications for Corporate and LOB FSS. Establish training requirements for LOB FSS to ensure they are up to date on current methods and procedures and have a working knowledge of key regulatory requirements.	Medium	B	
Field Operations				
V-1	Improve processes used to evaluate and translate best practices and techniques from one LOB organizational unit to others. Focus LOB FSS roles and responsibilities on integrating best practices among all LOBs, facilitating the implementation of corporate safety initiatives, and improving safety practices and awareness across all organizational units.	High	A	
V-2	NorthStar does not believe the FSS can be effective even in significantly great numbers given the geographic challenges associated with PG&E's service territory and the diverse job requirements. A more effective use of the FSS would be to have them focus on and support the first-line supervisors – foremen and crew leads.	High	A	
V-3	Perform a broad reassessment of all safety programs and initiatives to: evaluate overall effectiveness and make improvements, and eliminate scope overlap (e.g., the Corrective Action Program (CAP) vs. the Safety and Environmental Management System (SEMS) follow-up responsibility).	High	B	
V-4	Reevaluate staffing, roles, responsibilities and work requirements to increase Supervisor's time in the field supervising crews.	High	B	
V-5	Increase the training requirements for LOB FSS. Existing OSHA training is somewhat generic and not sufficiently related to PG&E's public and occupational hazards.	Medium	B	
V-6	Reevaluate the travel requirements placed on employees to reduce the overall mileage driven. Accelerate the use of mobile technology and electronic information exchange. PG&E employees drive a significant number of miles per year and are frequently called upon to support workload at great distances from their normal assigned locations.	Medium	A	
Budgeting and Spending				
VI-1	Develop a method of separating "safety" expenditures from routine reliability and integrity expenditures. This may occur as part of the CPUC's Risk Assessment Mitigation Phase (RAMP) process.	Medium	C	Addressed in RAMP. NorthStar does not know status
VI-2	Develop business case support and a record of management approval for safety initiatives in accordance with PG&E's Project Approval Procedure.	Low	A	
VI-3	Develop a method for weighting the value of management initiated safety programs comparable to the Risk Informed Budget Allocation	Medium	A	

A=Easy to implement/Low cost B= Harder to implement/Higher cost C=More difficult to implement or high cost				
Recommendation		**Priority**	**Ease of Implem./ Cost**	**In Process?**
	(RIBA) but focused on management and training.			
VI-4	Move forward with planned implementation of the Power Generation IPP Portfolio Planning and Management (PPM) system for all operational LOBs.	Medium	A	
VI-5	Continue efforts to better link IPP Session D to the Session 1 and 2 processes.	Low	B	In process
Compensation and Performance Management				
VII-1	None of the KPIs currently considered for use in measuring safety culture should be included as an incentive measure (i.e., included as part of the Short-Term Incentive Program (STIP) or the Long-Term Incentive Program (LTIP). This will only serve to provide artificially inflated results or drive unintended consequences. Most of the proposed metrics are based on either employee surveys or near hit/CAP reporting. Incentives tied to employee submittals will ensure targets are met and may minimize the value of the submittals (for example, a sudden influx of not particularly meaningful submittals prior to the end of a reporting period). Similarly, an incentive tied to survey results will drive positive reporting rather than true results,	Medium	A	
VII-2	Continue to track metrics eliminated from STIP as part of the Business Performance Review (BPR) process to allow trending.	Medium	A	
VII-3	Increase the weighting of safety in the LTIP to more closely align safety performance and executive compensation.	Medium	A	
VII-4	Reevaluate the appropriateness of the Earning from Operations component of the STIP due to its lack of transparency and the ongoing adjustments for Items Impacting Comparability.	Medium	A	
VII-5	Revisit all STIP metrics and targets in light of the enterprise-wide safety plan recommended by NorthStar. Set multi-year targets to drive performance. Include a contractor safety metric in the STIP. Following the development of the enterprise safety plan, PG&E should develop STIP and BPR metrics that measure plan implementation/ adoption and the effectiveness of the various initiatives identified in the plan. PG&E should continue monitor and report lagging OSHA metrics (i.e., DART, LWD, MVIs, fatalities) as part of the BPR process.	Medium	B	
VII-6	Develop a more robust and comprehensive set of BPR metrics addressing all aspects of safety such as public, employee and contractor safety; facility, infrastructure/asset and cyber security; environmental safety; public awareness; and, safety culture.	Medium	B	
VII-7	Improve the internal sharing of best practices. Increase the level of involvement by different groups and employee levels. As an example, NorthStar performed a management audit of National Grid Gas' New York operations a few years ago for the New York Public Service Commission. The utility had a fairly robust process improvement program. NorthStar's report describing the process is available on the New York State Department of Public Service's website.	High	B	
Training				
VIII-1	Accelerate crew foremen safety leadership training.	High	B	
VIII-2	Profile training participants so that individuals in office-based organizations generally do not receive field-oriented safety training ahead of field organizations.	Medium	A	
VIII-3	Complete the second 360-Degree Survey assessment for the Safety Leadership Development program participants and compare to the first assessment results to determine the effectiveness of the training and identify any gaps to be addressed.	Medium	B	
VIII-4	Conduct mandatory refresher training for Electric T&D, Gas Operations and Power Generation field resources on fundamental safety-related	Medium	B	

A=Easy to implement/Low cost B= Harder to implement/Higher cost C=More difficult to implement or high cost				
Recommendation		**Priority**	**Ease of Implem./ Cost**	**In Process?**
	topics such as confined space, safety at heights and personal protective equipment.			
VIII-5	Profile employees to receive Human Performance training.	Medium	A	Likely complete
VIII-6	Develop a monthly operator qualifications (OQ) status report for the Senior Vice President of Gas Operations and the President of Gas Operations. Include such information as number and type of examinations conducted, pass fail rates, number of qualifications expiring (in 90, 60, 30 and 5 days), the number of OQ scans conducted and the results.	Medium	A	
VIII-7	Conduct a review of 2014 OQs to determine if contract employees were working on PG&Es system with other expired OQs. Conduct additional re-inspections as necessary.	Medium	A	
VIII-8	Perform a feasibility study of PG&E training and testing of contractor employees for OQs. The study should consider the volume of students, the cost charged per unit, the availability of resources at PG&E and analysis of advantages and disadvantages.	Low	A	
VIII-9	Power Generation should continue to update its apprentice programs.	Medium	A	In process
VIII-10	Power Generation should work with the Academy to improve the timeliness of training completion.	Medium	A	In process
VIII-11	Power Generation should develop a refresher training program, similar to that of Electric T&D and Gas Operations.	Medium	B	
Communications				
IX-1	Develop and implement a strategic communications plan that does not overwhelm employees with too much information, but effectively addresses the issues identified in the January 2015 Monitor 360 Study, the 2016 Premier Survey (and PG&E's narrative analysis.)	High	B	
IX-2	Develop a consistent basis for measuring, tracking and trending employee attitudes regarding safety culture.	Medium	B	
IX-3	Develop and implement programs similar to Electric T&D's Reach Every Employee program in Power Generation and Gas Operations.	Medium	B	
IX-4	Assess the effectiveness of the 2016 Speak Up Culture campaign, particularly among field resources.	Medium	B	
Safety Reporting/Corrective Action				
X-1	Evaluate the adequacy of the information captured by various incident tracking systems (SEMS, CAP) to ensure it is sufficient to understand the causes of incidents, perform trending analyses and other analytics, and provide timely information. Improve CAP, near hit and incident tracking and reporting systems to increase the clarity of the information, ensure the appropriate level of causal evaluation has been assigned and that all required actions have been taken before an item is closed.	Medium	A – Evaluation B – Potential Changes	
X-2	Track the costs and relative safety benefits of the CAP and Near Hit Programs. Increase efficiencies or modify programs as warranted.	Medium	B	
X-3	Develop an evaluation program to maximize the benefits from CAP and Near Hit Reporting.	Medium	A	
X-4	Develop an evaluation program for Serious Incident Investigations to include periodic audits of the processes by Internal Audit.	Medium	A	
X-5	Improve documentation of corrective actions for incidents and near hits subject to a Work Group Evaluation (WGE), as well as for incidents subject to an Apparent Cause Evaluation (ACE) and Root Cause Evaluation (RCE).	Low	A	
X-6	Report and track incidents in a consistent manner such that appropriate information may be shared across the enterprise. Develop a central	Medium	B	

A=Easy to implement/Low cost B= Harder to implement/Higher cost C=More difficult to implement or high cost				
Recommendation		**Priority**	**Ease of Implem./ Cost**	**In Process?**
	repository for this information which should include an executive summary, corrective actions taken, any materials developed and the effectiveness evaluations.			
X-7	Develop a protocol involving concise, targeted, timely communications to notify other crews, work locations and LOBs of incidents or corrective actions that are applicable to that group.	Medium	B	
X-8	Develop a single, consistent enterprise causal evaluation standard combining Utility Standard: SAFE-1004S (Serious Investigation Standard) and the Enterprise Causal Evaluation Standard (Utility Standard: GOV-6102S). Incorporate the specified improvements.	Low	A	
X-9	Compare all LOB Causal Evaluation Standards to ensure the processes are consistent and all required elements are defined. As an example the Power Generation Procedure includes a discussion of the WGE process. Electric T&D and Gas Operations procedures do not. Gas Operations procedures do not include an RCE process timeline and appear to group RCE and ACE. The RCE communications plan for all procedures should include the communications process for follow-up on the Effectiveness Review Plan. Establish guidelines for communication of the corrective actions and the effectiveness reviews, as these are currently tracked separately by LOB.	Medium	A	
Contractor Safety				
XI-1	Corporate Contractor Safety should select the projects for review rather than the LOBs, and conduct "surprise" field visits to assess contractor safety practices.	Medium	A	
XI-2	Determine whether it is feasible to update the language in contracts to remove all references to the contractor or consultant being "solely responsible" for performing work in a safe manner.	Low	A	
XI-3	Develop formal criteria to close contractor serious safety incident action items in ISN.	Low	A	
XI-4	Facilitate the sharing of best practices and lessons learned regarding the LOBs' implementation of the Contractor Safety Standard, addressing both organizational and procedural issues.	Medium	A	
XI-5	Update LOB contractor safety procedures to clarify responsibilities and reflect current organizations and processes. Include guidelines regarding the frequency of field observations.	Medium	B	
XI-6	Institute a contractor on-boarding test in Power Generation.	Low	B	

H. RECOMMENDATIONS FOR THE COMMISSION

NorthStar provides the following recommendations for consideration by the Commission.

1. Eliminate penalties for self-reporting of safety-related incidents by the California utilities; instead, implement a system that encourages reporting of actual and potential safety incidents to be shared among the utilities in order to identify best practices and share lessons learned. Actual incidents should be reported, as well as near hits. The CPUC should work with the California IOUs to define the parameters of near hit reporting. The system should be open to municipalities to encourage lessons learned sharing across the state.

2. Working with all California IOUs, develop a listing and consistent definitions of key safety-related metrics to be tracked on a monthly basis and reported to the CPUC at an agreed upon frequency. Performance reporting should be handled in a non-punitive manner, but subject to audit by the CPUC. On an annual basis, each utility's Internal Audit function should audit and render an opinion as to the accuracy of the information reported to the CPUC.

3. Consider the implementation of a performance-based ratemaking mechanism with a fixed component based on traditional ratemaking principles and a variable adder based on safety performance. Both components should have defined ranges. Safety performance can be defined in a variety of ways. As with any incentive mechanism, the potential for gaming is real. NorthStar's recommendations to PG&E, includes items that should provide a greater tie between safety performance and executive compensation.

    - NorthStar has recommended that PG&E reevaluate the appropriateness of the Earnings from Operations component of the STIP due to its lack of transparency and the ongoing adjustments for Items Impacting Comparability.
    - NorthStar recommends that PG&E increase the weighting of safety in the LTIP to more closely align safety performance and executive compensation. For a Named Executive Officer, the amount of compensation tied to safety performance through the STIP and LTIP is roughly eleven percent of the amount of total compensation awarded in a given year assuming stock prices remain at the assumed level and the Total Shareholder Return over the next three years is at target.
    - Increasing the proportion of LTIP meaningfully tied to safety-performance over a three-year horizon, may increase the tie between safety and compensation at the executive level. The design of this or a clawback mechanism would need to be carefully constructed to provide a reasonable likelihood of achieving the goal.
    - Consideration could also then be given to providing the Compensation Committee with similar authority over the granting of the safety portion of the LTIP – similar to the discretion it has over the STIP.

4. Perform periodic audits of the safety programs and culture of PG&E, and potentially the other major California investor-owned utilities.

5. Work planning and preparation has a significant impact on job safety. When utility work has an identified public safety impact, the CPUC needs a multi-agency hot line that PG&E (or other utilities) can call and request that the Commission contact the municipal permit department to encourage interagency collaboration and expedite work permits on an exception basis.

CHAPTER VII: COMPENSATION AND PERFORMANCE MANAGEMENT

This chapter provides the results of NorthStar's review of PG&E's compensation and performance management programs, including the use of metrics or Key Performance Indicators (KPIs), and their effectiveness in driving improved safety performance. NorthStar recognizes that it is difficult to quantitatively measure culture.

A. BACKGROUND

Compensation

PG&E has a pay-for-performance approach to compensation. Compensation components include: base pay, a short-term incentive program (STIP) – effectively an annual bonus program, a long-term incentive program (LTIP), health and welfare benefits, and retirement benefits. The largest component of most employees' compensation is their base pay. Safety is included in an employee's job responsibilities and required qualifications, and in their individual goals and competencies. Performance is evaluated based on achievement of goals, as well as how the goals are achieved.

STIP

Executives, non-represented employees and certain professional, represented employees participate in STIP.[1] STIP is designed to provide a link between pay and company performance. All non-participants have a leader that participates in STIP.[2] In 2016, the STIP "score" was based on 12 measures, some of which were a composite of other measures.[3] **Exhibit VII-1** (following page) provides the STIP measures and actual performance for 2015, and targets for 2016. Nine of these measures are considered safety-related. Safety represents 50 percent of the total STIP.

Each STIP measure has a threshold, target, and maximum level of performance used to arrive at a score ranging from zero to 2.0 for that measure. Performance below the minimum performance level, or threshold, results in a zero score. Performance at the threshold results in a STIP score of 0.5. Achieving target results in a STIP score of 1.0, and performance at or above the maximum established level results in a score of 2.0. A score of 1.0 provides 100 percent of an individual's target payout. Performance at the threshold and maximum levels delivers 50 percent and 200 percent of targeted payouts, respectively. Linear interpolation is used to determine scores for performance between threshold and target, and between target

[1] About 10,000 employee participate in STIP
[2] DR 004 Attachment 008, IR 7
[3] DR 004 Attachment 008

and maximum. The STIP overall performance score is the sum of the weighted cumulative average scores for performance on each of the STIP measures.[4]

The amount an employee can earn varies, based on the employee's salary band (i.e., 6 to 30 percent of base salary for non-officer employees). Leaders may modify an employee's STIP payout – up or down, based on the employee's individual performance. In its recent GRC, PG&E sought rate recovery of STIP payouts for its non-executive employees only.[5] Executive employee STIP payments were shareholder-funded.

Exhibit VII-1
2015 STIP Performance and 2016 Targets

	Measurement	2015 Target	2015 Perf	STIP Score	Weighted Average Score	2016 Target
Safety (50%)						
Public Safety						
Energy Supply						
DCPP Reliability Indicator Unit 1 (4%)	Composite of 12 nuclear industry lagging indicators	94.2	99.44	2.000	0.080	98.70
DCPP Reliability Indicator Unit 2 (4%)	Composite of 12 nuclear industry lagging indicators	94.2	99.83	2.000	0.080	98.70
Electric						
T&D Wires Down (5%)	Number of Incidents	2,540	2,572	0.787	0.039	2,572
911 Emergency Response (5%)	Percent of time on site within 60 minutes	95%	97.14%	2.000	0.100	97.5%
Gas						
Gas Dig-In Reductions (5%)	Incidences per 1,000 Underground Service Alerts	2.06	2.11	0.896	0.045	2.03
Gas Emergency Response (5%)	Average Response Time	21.0	20.33	1.670	0.084	21.0
In-Line Inspection and Upgrade (6%)	Ability to complete planned inspections and pipeline retrofit projects. Weight of miles inspected and replaced	1.0	1.52	1.520	0.091	1.0
Employee Safety						
Lost Work Day Case Rate (8% - 2015, 6% - 2016)	Number of lost workday cases incurred per 200,000 hours worked (or for approx. every 100 employees). 0.25 may be added for zero serious incidents	0.330	0.372	0.000	0.000	0.320
Serious Preventable Motor Vehicle Incident (SPMVI) Rate (8% - 2015, 6% - 2016)	Number of SPMVIs that the driver could have reasonably avoided per 1 million miles driven	0.239	0.266	0.614	0.049	0.239
Timely Reporting of Injuries (new 2016)	Percent within 24 hours					67.1%

[4] 2016 Proxy Statement, www.pgecorp.com
[5] DR 565 Attachment 001 (2017 GRC Late Filed Exhibit on Executive Compensation and Safety, Exhibit (PG&E-43))

	Measurement	2015 Target	2015 Perf	STIP Score	Weighted Average Score	2016 Target
Customer (25%)						
Customer Satisfaction Score (15%)	As measured through a quarterly survey	77.2	75.5	0.000	0.000	75.7
System Average Interruption Duration Index (SAIDI) (10%)	Total time an avg. customer is without electricity during a given time period in minutes	106.6	96.33	2.000	0.200	96.30
Financial (25%						
Earnings from Operations (EFO) $M		Budget	$1,518.87	1.763	0.449	Not disclosed
					1.217	

Source: 2016 Joint Proxy Statement, DR 565 Attachment 001 (2017 GRC Late Filed Exhibit on Executive Compensation and Safety, Exhibit (PG&E-43)).

LTIP

Officers, directors and some managers/professionals participate in LTIP. LTIP is completely shareholder-funded. Performance shares comprise 60 percent of the LTIP; the remaining 40 percent are in Restricted Stock Units (RSUs) that vest over three years – generally one-third at the end of each year of the vesting period.[6] Fifty percent of the LTIP is performance shares that pay out in a range from 0 to 200 percent based on PG&E Corp.'s Total Shareholder Return (TSR) over a three-year period (at the end of the three year period), and 10 percent of the LTIP is performance shares using equally weighted safety and affordability measures. TSR is the total return of a stock to an investor, or the capital gain plus dividends. TSR is the internal rate of return of all cash flows to an investor during the holding period of an investment. In 2012, 2013 and 2014 there was no payout for the performance shares granted in 2009, 2010 and 2011, as PG&E's TSR was at the bottom of its comparator group.[7] For shares granted in 2015, the comparator group consisted of 14 companies that are consistently considered by the investment community as regulated rather that less regulated and with a market capitalization of at least $4 billion. The 2015 payout (for shares granted in 2012) was 35 percent and the 2016 payout (for shares granted in 2013) was 50 percent. RSUs pay out each year and are based on stock price.

Compensation Committee

The Compensation Committee of the PG&E Corp. Board advises and assists the PG&E Corp. and PG&E Boards with the compensation of Directors; certain policies and practices regarding employment, compensation, and benefits; and the development, selection, and compensation of policy-making officers. The Compensation Committee reviews and approves the corporate goals and objectives of the CEO, and evaluates his/her performance; provides recommendations to the full Board regarding the CEO's salary and other compensation; and reviews and acts on the recommendations of the CEO concerning salaries

[6] 2016 Proxy Statement, www.pgecorp.com
[7] DR 006-CONFIDENTIAL, DR 565 Attachment 001

and other compensation of all other officers of PG&E Corp. The Committee retains a compensation consultant that provides annual input on compensation levels and trends.[8]

The Committee reviews and approves the STIP and LTIP structures; approves or modifies the STIP score; and determines the payouts under the LTIP. The NOS Committee also reviews the annual STIP structure, including the weightings and proposed metrics and provides feedback to the Compensation Committee.[9]

Performance Management

In addition to the STIP metrics, PG&E tracks a number of other safety and performance metrics. These are discussed in various LOB business update meetings, at each LOB's Safety Council and the monthly enterprise Business Performance Review. Operations and safety-related metrics are also presented to the NOS Committee.[10] In Session 1 of the IPP (discussed in **Chapter VI: Budgeting and Spending**) each LOB develops goals based on the Executive Guidance provided in Session D and the five-year plan. The product of Session 2 provides the KPIs for each goal area and the associated five-year targets. PG&E refers to these KPIs as the "BPR" metrics as they are discussed in the monthly Business Performance Reviews (BPR). Each LOB (Gas Operations, Electric T&D, Generation, Energy Policy & Procurement, Customer Care, IT, S&SS, Human Resources, External Affairs and Public Policy, Regulatory Affairs, Finance and Risk, General Counsel, Compliance) has roughly 20 to 30 BPR metrics. The BPR process also includes a review of Enterprise Programs and Safety Metrics (27 metrics in 2016).[11]

Exhibit VII-2, on the following page, provides an example of how the goals cascade into metrics, based on Electric T&D. The exhibit provides all metrics but only a small, illustrative sample of S-1 goals. A portion of the BPR metrics are also included as part of PG&E's STIP and, more recently, its LTIP.

[8] DR 008 Attachment 015, Compensation Committee Charter, DR 006-CONFIDENTIAL (Review of Compensation Committee Materials and Meeting Minutes)
[9] DR 565
[10] DR 767 Attachment 003
[11] DR 665 Attachment 001

Exhibit VII-2
Cascading Goals and Metrics Example – Electric T&D

Goal	Contributing to Goal (S-1) Examples	2017 BPR Metrics
Public Safety	Zero Public Safety Incidents • 1st Quartile 911 Response by 2017 • 1st Quartile T&D Wires Down by 2018 • Engage customers about safety to prevent public contacts	• 911 Response (STIP) • Electric Overhead Conductor Index (STIP) Proposed • Fire Ignitions • T&D Wires Down
Workforce Safety	Reduce safety incidents while eliminating serious incidents and fatalities • 1st Quartile LWD Case rate – 2018 • Create a "speak up" culture and climate of trust	• LWD Case Rate/Count • Serious Preventable Motor Vehicle Incident Rate/ Count • Timeliness of Reporting of Injuries
Compliance	Leverage our compliance framework to strategically identify and close gaps • Establish "Find It First" control testing • Implement CAP to identify and mitigate emergent issues	• Compliance Mitigations Complete
Emergency Preparedness and Response (EP&R)	Respond to all emergencies safely, quickly, and transparently to meet the needs of the communities we serve • Continue to develop an all hazards approach to emergency preparedness • Analyze the Enterprise Risk list to analyze capabilities	• EP&R Maturity Level (out of 5)
Reliability	Improve system reliability • Maintain 2nd Quartile SAIDI & SAIFI through 2021 • Incorporate voice of the customer feedback into reliability decisions	• SAIDI (STIP) • SAIFI • CEMI5
Affordability	Operate efficiently to deliver electricity cost effectively • Achieve targeted efficiency savings through 2021 and meet pessimistic financial target guidance • Deploy technology enhancements	• ET&D Expense Spending • ET&D Capital Spending • ET&D Expense Efficiencies • ET&D Capital Efficiencies
Customer Satisfaction	Industry leading customer satisfaction • 2nd Quartile – Customer Satisfaction Score: Reliability by 2018 • Meet customer commitments by improving work flow management	• Customer Commitments Met
People	Lead, engage and develop our workforce • Achieve and maintain 2nd Quartile score on the Premier Survey by 2018 • Address capacity constraint issues – development opportunities	• Tracked through Premier Survey

Note: Metrics highlighted in yellow are compared against a benchmark panel.
Source: 2016 S-1 and S-2 – CONFIDENTIAL.

Each year Gas Operations goes through a similar process and develops a "Line of Sight Goals" booklet for its employees that summarizes each department's goals and generally ties these goals to the overall goals identified in the S-1 process. **Exhibit VII-3** shows the relationship between the 2016 S-1 goals, BPR metrics, and the Line of Sight goals for a representative department, Gas T&D Construction.

On an annual basis, Power Generation develops a Safety Action Plan, outlining its activities to improve public and employee safety. The action plan is reported to the Generation Safety Council on a monthly basis. Initiatives have milestones, owners and associated metrics. Multiple initiatives may be aimed at moving one metric.[12]

[12] DR 093 Attachment 001

Exhibit VII-3
Example of Relationship of Gas Operations S-1 Goals and Metrics to Line of Sight Goals (Gas T&D Construction)

Goal	2016 BPR Metrics	Department Goals [Note]
S-1 Goals		
Public Safety	• Gas Dig-Ins Reduction • Gas Emergency Response • In-line Inspection Index • Grade 2 and 2+ Leak Backlog • Shut in the gas – Average times – Mains & Services • CAP Engagement • Legacy Cross Bore Inspection • Distribution Main Replacement	• Execute construction work safely • Ensure our assets are left in safe condition after work completed • Embed safety principles into the execution of Gas T&D Construction work • Support emergency response and preparedness • Promote a learning culture, using CAP • Reinforce a strong safety culture/Promoting wellness and injury/accident free use the 24/7 Nurse Helpline • Recognize and encourage employees to model safety behavior and improve public safety
Workforce Safety	• Employee LWD Case Rate • SPMVI Case Rate	
Reliability	• Distribution Network % SCADA visibility • Large Over Pressure Events	• Ensure system reliability through timely clearance submission and adherence • Ensure qualification of workforce and adhere to standards and procedures • Support quality management systems
Affordability	• Average Time for Main Leak Repair • Average Time for Service Leak Repair	• Implement process improvements • Develop clear targets that measure Gas T&D Construction performance • Improve cost tracking SAP, new Cost Model
Employee Engagement	• CAP engagement	• Partner with other LOBs re: enterprise-wide opportunities to support one PG&E. • Enhance workforce and contractor strategic alliances and partnerships with IBEW and ESC • Career development opportunities, recognition, timely communications, feedback from Premier Survey
Customer Satisfaction	No BPR Metrics Tracked and Assessed through Session D and Session 1	• Continue to re-build customer trust by improving the safety of the system. • Support new market development through timely completion of new business work.
Mitigate Top Risks	• Risk Mitigation	•
Path to Notices of Violations	• Quality Index • Compliance Mitigation • Mandatory Training	•
Not in S-1		
Compliance		• Inspections and records reviews • Timely completion of training, operator quals for work performed, calibration of tools • Enhance records quality

Note: NorthStar summarized the department goals for the purpose of this exhibit.
Source: DR 39 Supplement 001 Attachment 053-CONFIDENTIAL; DR 080 Attachment 001.

B. Evaluative Criteria

- Has PG&E identified measurement parameters of safety cultural strategy change to determine progress or identify necessary changes? Is the measurement on-going?
- Does management measure the results of the various safety initiatives and their contribution to goal achievement?
- Are links between safety performance and compensation appropriate at the various levels within the organization?
- Do the Board of Directors and executive leadership hold themselves and management accountable for their decisions and actions which may impact safety or PG&E's safety culture?
- Does the Company conduct best practices benchmarking assessments? Is there a sharing of best practices within the various organizations within PG&E on safety culture strategy and implementation?

C. Findings and Conclusions

1. **PG&E has identified metrics it intends to use to measure cultural change; however, a safety culture index or final metric has not yet been developed. As many initiatives are in their infancy, the effectiveness of the potential safety culture measures cannot yet be assessed. Some metrics may prove more useful than others.**

    - PG&E proposes to measure safety culture progress through the methods described below.[13] NorthStar was not provided information on specifically how these measures will be used nor the associated KPI definition/lexicon, as PG&E had not yet developed a formal measurement process.

        – The Organization Culture Diagnostic Instrument (OCDI) Survey. A survey-based baseline assessment of safety culture performed by a third-party in 2013 (results were provided in 2014). PG&E intends to the perform the survey again in 2017 to assess progress. It is unclear whether this will actually be performed as the initial survey was performed by a third-party.

        – Numbers of leaders completing Safety Leadership Development workshops. These workshops are intended to improve the environment and conversations between leaders and their teams, to encourage employees to speak up if they see issues. PG&E currently tracks this.[14] The Safety Leadership Development workshops are discussed in detail in **Chapter VIII: Training**.

[13] DR 225
[14] DR 225 and Attachments 001-002

– Near Hit Reporting. The intent of the Near Hit Program is to increase awareness of potential safety issues, increase dialogue and mitigate risks, thus preventing, as opposed to responding to, incidents. PG&E currently tracks the number of reported near hits.[15] The Near Hit Program is discussed in detail in **Chapter X: Safety Reporting/Corrective Action**.

– The Corrective Action Program. Similar to the Near Hit Program, CAP allows employees to identify potential safety, process or other issues, so that items can be resolved before creating a potential safety incident. PG&E currently tracks this.[16] CAP is discussed in detail in **Chapter X: Safety Reporting/Corrective Action**.

– The Premier Survey. The Premier Survey is PG&E's most comprehensive employee survey. Currently it is conducted every two years and covers a variety of topics including elements of safety culture. The Premier Survey is discussed in detail in Chapter **IX: Communications**.

- **Exhibit VII-4** provides a discussion of each of the proposed measures.

Exhibit VII-4
NorthStar Discussion of Proposed Safety Culture Measures

Culture Measure	Discussion
Safety Leadership Development Workshop Program Throughput	• Training hours or throughput are used by other utilities to measure safety. • Measures input only, not results or effectiveness. • Change in the structure, format or time required for training may cause a jump in performance depending on how the measure is calculated.
Near Hit Program	• Includes non-work events. If volumes of reported near hits become burdensome from a cost standpoint the reporting requirements may change which would result in an inconsistent basis for measurement. • Employees may be unclear on the distinction between Near Hits and CAP items. Use of both as a measure requires proper classification. An aggregate measure may provide more consistent reporting.
CAP	• Program in its infancy. Will not be rolled out to all business units until 2017. As a result, counts will increase as new LOBs are added, not necessarily from increased use. • If the number of reported CAP items becomes burdensome from a cost standpoint the reporting requirements may change which would result in an inconsistent basis for measurement. • Issues reported in CAP may belong in other reporting systems. As employees better recognize the difference and report to the proper system, this might skew results. • Employees may be unclear on the distinction between Near Hits and CAP items. Use of both as a measure requires proper classification. An aggregate measure may provide more consistent reporting.

[15] DR 225 and Attachments 001-002
[16] DR 225 and Attachments 001-002

Culture Measure	Discussion
Premier Survey	• Participation levels are high, which is positive. • Currently only conducted every two years. Premier with a pulse survey might provide more timely information. • Although a general sense of safety culture can be obtained based on similar questions, the survey questions have changed year over year thus providing an inconsistent basis for evaluation. • Surveys are subjective measures and employee responses can be driven by a number of factors including the timing of the survey.
OCDI Survey	• See discussion above regarding surveys. • This survey was conducted four years ago. Performing a survey every four years does not allow for timely identification and correction of issues. • The results are complicated and difficult to interpret. • Potentially costly as it was performed by a third-party. Likely difficult to replicate. If it was based on in-person interviews that adds additional, potentially biasing factors. • Responses to certain of NorthStar's date requests indicate that the performance of a second OCDI survey is not guaranteed.

Source: DR 225, NorthStar Analysis, DR 048 b, DR 257 (OCDI survey).

- PG&E is currently developing a Safety Management System (SMS) to enhance its ability to monitor and assess safety performance and culture. As the SMS is in the early stages of development, NorthStar cannot assess it or its ability to measure culture change.[17] Proposed KPIs to be tracked through the SMS are the same as those that are currently tracked and do not specifically measure safety culture.[18]

- PG&E conducts 360-degree feedback assessments of supervisors and superintendents as part of the Safety Leadership Development Program.[19] Conducting these periodically or having employees evaluate the safety performance of their supervisors/leaders might be used to assess progress in changing culture. Other possible measures include independent observation of positive behaviors or appropriate safety coaching.

2. Some of PG&E's various safety initiatives have direct measures of performance; however, most do not. Generally, multiple initiatives may affect one measure. Examples are provided below.

- PG&E tracks the number of Near Hits and CAP submittals, the number of anonymous submittals, the percentage of the work force reporting CAP items, submittal backlogs, response times and closure rates. These measures are specific to the programs, and measure the adoption of the programs. The CAP and Near Hit submittals are also used as a measure of culture change.

- There are several programs designed to reduce MVIs and SPMVIs. The intent is that these programs will reduce incidents, but a reduction cannot be attributed to an individual initiative or effort.

[17] DR 255, DR 257
[18] DR 257
[19] DR 257

- PG&E tracks the calls to its 1-800 driver check line. According to PG&E, a driver reported more than once is more likely to end up in an MVI. Some supervisors provide special counseling to these drivers.
- Telogis provides statistics on unsafe driver behavior such as speeding and harsh breaking.
- Field interviews indicate that some of the field offices examine what time the MVIs occurred in order to devise ways to reduce accidents at those specific times.
- PG&E also has driver training and rodeos.

- PG&E measures the timeliness of the reporting of injuries to the 24/7 Nurse Report Line, but has no way of knowing if the employee followed the recommended course of action (e.g., self-care). According to PG&E, early intervention has been shown to reduce the severity and duration of injuries. However, PG&E cannot confirm the call led to early intervention. On-site physical therapists provide more direct early intervention.

- The Industrial Athlete Program, the 24/7 Nurse Report Line, changes in tools, ergonomic programs and procedures, and on-site physical training are all designed to reduce injuries. Injury statistics like LWD, DART and OSHA Recordables should improve as a result of these initiatives, but it is difficult to determine what specifically contributed to the improvement. JHAs, increased awareness or focus on job safety, and numerous other variables may contribute to reduced injuries.

- Gas Dig-In Reductions measures the effectiveness of PG&E's efforts to reduce third-party dig-ins. The Gas Dig-In Reductions measure is also used as a public safety KPI. In this case Gas Dig-Ins are used as both a leading and lagging indicator. Leading indicators provide information about the current situation that may affect future performance. Used properly, leading indicators help an organization respond to changing circumstances and take actions to achieve desired or to avoid unwanted outcomes. Lagging indicators measure outcomes that have resulted from past actions.

3. There are links between safety performance and compensation at most organizational levels.

- Bargaining unit employees do not receive performance-based bonuses.[20] Although front-line employees can be one of the greatest drivers of safety, it is challenging to develop a metric that does not potentially foster unwanted behavior.[21]

- To encourage reporting and discourage immediate supervisors from pressuring employees, PG&E stops the cascading of certain quantitative goals at an

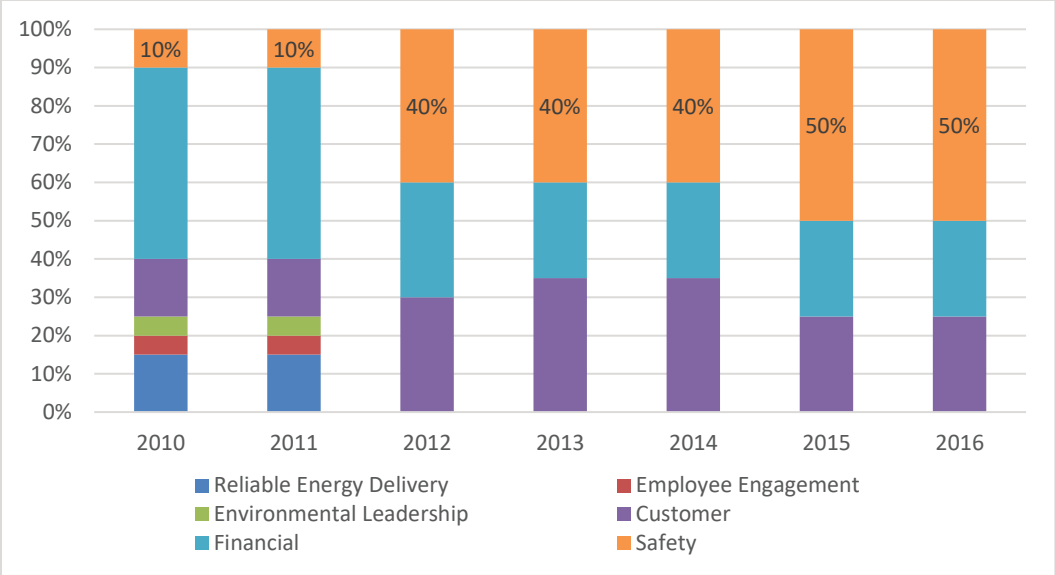
[20] This varies through the industry and it would be an element of the bargaining unit agreement.
[21] This is one of the drivers behind OSHA's requirement that entities participating in VPP cannot provide incentives tied to OSHA reporting,

appropriate level. Previously, supervisors had OSHA recordables and MVIs as a goal. Now the Director-level is the lowest level at which these are a goal.[22]

- For most employees, base pay is the largest component of their compensation. Annual increases are based on the employee's performance in terms of goal achievement and competencies and annual merit increase guidelines. Safety is included in the employee's goals and competencies.

- PG&E increased the weighting of safety measures in the STIP from 10 percent in 2011 to the current level of 50 percent as shown in **Exhibit VII-5**. The 50 percent weighting is considerably higher than typical of the utility industry.[23] It should be noted that over time, some of the metrics classified as "Customer", such as gas dig-in reduction and the in-line inspection index were moved into the "Safety" category.

Exhibit VII-5
STIP Metric Safety Weighting



Source: DR 004 Attachment 008, DR 006-CONFIDENTIAL (Compensation Committee Materials)

- As discussed in further detail in Conclusion 5, the amount of the STIP payout has been reduced as a result of safety incidents.

[22] IR 238
[23] NorthStar's experience, Compensation Consultant research (IR 259)

4. **For leaders that participate in the LTIP, the direct tie between safety performance and compensation is not as strong due to the relative levels of STIP and LTIP potential payout. The LTIP functions as intended for employees that remain with PG&E following a significant safety incident but does not function retroactively.**

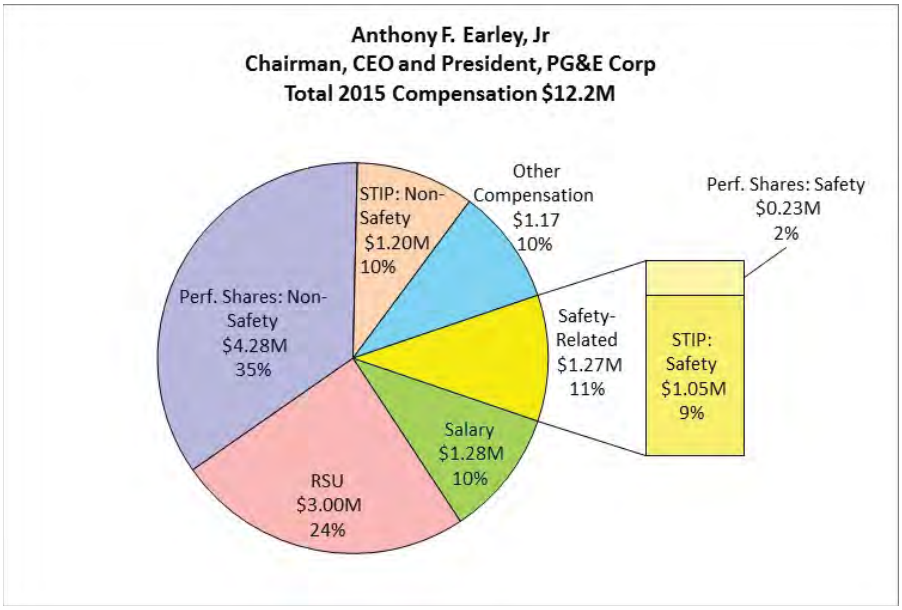
    - The LTIP represents a significant portion of executive management's annual compensation award. The LTIP is deferred compensation subject to payment requirements.

    - The LTIP is composed of performance shares and RSUs. Previously the split was 50 percent each. In 2015, an employee safety metric, Lost Work Day (LWD) Case Rate, was added to the LTIP and used to determine 5 percent of the value of performance shares. An affordability metric was also added representing 5 percent of the value of the performance shares. This increased the weighting on performance shares to 60 percent. Performance shares account for 60 percent of the LTIP from 2015 through 2017. For 2017, the LTIP safety metric was changed from LWD Case Rate to SIF – Effectiveness of Corrective Actions.

    - **Exhibit VII-6** provides a breakdown of the compensation awarded to Mr. Earley in 2015. If the LTIP were to pay out based on the values at time of award, the safety-related compensation would account for roughly 11 percent of his total annual compensation (The value of the LTIP shown assumes that PG&E achieves its LTIP targets.) The same is true for the other Named Executive Officers (NEOs).

    - The STIP target is 100 percent of salary for the CEO.
    - In 2015, the LTIP award was over 5 times salary - $7.5M. The safety component of that was $0.23M, not enough the serve as a significant incentive.

Exhibit VII-6
2105 Awarded Compensation – CEO



Source: 2016 Joint Proxy Statement

- Although safety is not a large component of the LTIP, PG&E's safety performance and the incident at San Bruno have affected the LTIP. The payout in February 2011, for performance shares for the three-year period ending December 2010 was 100 percent. In 2012, 2013 and 2014 there was no payout for the performance shares granted three years prior, as PG&E's TSR was at the bottom of the comparator group. In 2015 the payout was 35 percent and for 2016 it was 50 percent.[24]

- Similarly, the RSU are tied to stock price. PG&E's stock price was also below the comparator group during this period.

5. **There are processes by which the Board of Directors and executive leadership may hold themselves and management accountable for decisions and actions which may impact safety or PG&E's safety culture. This is primarily through the STIP. For the most part, the financial markets must hold them accountable under the LTIP.**

    - PG&E management generally informs the NOS Committee and the Boards of employee and contractor fatalities.[25] With the introduction of the SIF Prevention Program, the NOS Committee receives updates on SIF exposure percentage, SIF exposure counts, timely corrective actions completed, and SIF counts (contractor,

[24] DR 565 Attachment 001 (2017 GRC Late Filed Exhibit on Executive Compensation and Safety, Exhibit (PG&E-43)), DR 006-CONFIDENTIAL, Compensation Committee Meeting Minutes.
[25] DR 767, DR 006-CONFIDENTIAL (Review of Board Meeting Minutes), IR 240 (Attendance at NOS Committee Meeting – recent vegetation management contractor fatality was discussed)

public and employee), along with other safety metrics. Beginning in 2012, PG&E provided routine safety reports to the NOS Committee.[26]

- At its December 2010 meeting, the Compensation Committee modified the STIP structure such that a work-related employee fatality would not automatically reduce the safety rating as the Compensation Committee has the discretion to modify the rating.[27]

- The Board has discretion to adjust the amount of the STIP payments Officers.

  - In February 2011, the Compensation Committee exercised its discretion and eliminated the 2010 STIP payments to Officers. At that time the Committee did not have the discretion to the STIP rating for non-officer and management had not communicated any such discretion to non-officer employees.[28] However, the Safety Index Score had been capped at 1.0 due to two on-the job fatalities, in accordance with the calculation methodology.[29]
  - For 2011 and beyond, the STIP Plan documents and PG&E communications were to clearly communicate the Committee's discretion to reduce STIP payments and ratings to all employees.[30]
  - In February 2016, the Compensation Committee reduced the final LWD Case Rate Score to zero in light of a September 30, 2015 employee fatality. A serious injury has an impact on LWD, but a fatality does not. This was the first year that LWD would have resulted in a bonus.[31]

- Conversely, San Bruno expenses were removed from the 2010 and 2011 Earnings from Operations (EFO), as they were considered an Item Impacting Comparability.[32] Unbudgeted items related to natural gas pipeline matters were similarly removed from the 2012 STIP performance results.[33] This served to increase the payout associated with the financial component of the STIP.

- In 2015, PG&E added a safety component to the LTIP; however, this accounts for only 5 percent of the LTIP award.

6. Current BPR and STIP/LTIP metrics do not address all aspects of safety.

- The events leading up to the OII included two incidents at the Kern Power Plant involving contractor fatality and a contractor serious injury, a house explosion in Carmel, two separate attacks on the West Park Substation in Bakersfield, a security breach at the Metcalf substation and violations related to the natural gas pipeline

[26] DR 006-CONFIDENTIAL, NOS Committee Meeting Minutes
[27] DR 006-CONFIDENTIAL, December 14, 2010 Compensation Committee Meeting Minutes
[28] DR 006-CONFIDENTIAL, February 15, 2011 Compensation Committee meeting package
[29] DR 565 Attachment 001 (2017 GRC Late Filed Exhibit on Executive Compensation and Safety, Exhibit (PG&E-43))
[30] DR 006-CONFIDENTIAL, February 15, 2011 Compensation Committee meeting package
[31] DR 006-CONFIDENTIAL, February 16, 2016 Compensation Committee Meeting Minutes
[32] DR 006-CONFIDENTIAL, February 15, 2011 February 14, 2012 Compensation Committee meeting package
[33] DR 006-CONFIDENTIAL, February 20, 2013 Compensation Committee meeting package

system. PG&E has also experienced employee and contractor fatalities since the start of NorthStar's review. Other than LWD Case Rate, the STIP metrics do not address these issues.

- There are no metrics related to facility security.
- Contractor safety is included in the BPR metrics but not the STIP.
- Power Generation tracks public safety awareness as part of the BPR process but Electric T&D and Gas Operations do not.
- There are no enterprise-level environmental safety or cyber security metrics.
- The gas leak emergency response metric ties to actions intended to prevent or minimize damages and injuries; however, this requires the customer to call in when they smell gas.

7. **There has been ongoing change in some of the STIP and LTIP measures. While this is partially indicative of the current state of PG&E's safety culture evolution, it makes performance trending more challenging. Additionally, newly introduced metrics are more subjective than prior metrics.**

- **Exhibit VII-7** shows the evolution of STIP and metrics from 2014-2017. Shading is used to highlight changes.

Exhibit VII-7
STIP and LTIP Metrics – 2014 to 2017

	2014	2015	2016	2017
STIP				
Safety				
Public Safety				
DCPP Unit 1 Safety and Reliability Index	4%	4%	4%	4%
DCPP Unit 2 Safety and Reliability Index	4%	4%	4%	4%
Electric Overhead Conductor Index				5%
ET&D Wires Down (Instances less major events)	4%	5%	5%	
ET&D 911 Response within 60 minutes	4%	5%	5%	5%
Gas In-Line Inspections and Upgrades (complete planned work		6%		
Gas Dig In Reduction	4%	5%	5%	5%
Gas Emergency Response	4%	5%	5%	5%
Employee Safety				
SIF Corrective Action Index (Quality and Timely Completion)				6%
Timely Reporting of Injuries			4%	4%
LWD Case Rate	8%	8%	6%	
SPMVI	8%	8%	6%	6%
Subtotal	**40%**	**50%**	**50%**	**50%**
Customer				
Gas In-Line Inspections and Upgrades (complete planned work)	5%			
Execute Gas Pipeline Safety Work Index	5%			

	2014	2015	2016	2017
STIP				
Safety				
Gas Asset Mapping Duration	5%			
Customer Satisfaction (products and services)	10%	15%	15%	15%
SAIDI	10%	10%	10%	10%
Subtotal	**35%**	**25%**	**25%**	**25%**
Financial				
Earnings from Operations	25%	25%	25%	25%
Subtotal	**25%**	**25%**	**25%**	**25%**
TOTAL	**100%**	**100%**	**100%**	**100%**
LTIP				
Performance Shares				
TSR		50%		50%
SIF Effectiveness of Corrective Actions				5%
LWD Case Rate		5%	5%	
Affordability/Financial EFO per Share				5%
Affordability (Three Year Efficiency Gains)		5%	5%	
		60%	**10%**	**60%**
RSUs (Tied to Stock Price)		**40%**	**40%**	**40%**

- Most of the 2016 metrics were still lagging indicators. PG&E has been striving to increase the number of leading indicators in the STIP and LTIP.

- Until recently, PG&E's philosophy was to use metrics that were auditable, with an emphasis on benchmarking.

- For 2017, PG&E made changes to its STIP metrics as described below. According to PG&E this increased the number of leading indicators, but in actuality it also reduced the number of KPIs that could be benchmarked and increased the subjectivity of some of the metrics. It is too early to determine the effectiveness of these metrics.[34]

    - After gaining some traction in its efforts to drive the industry towards the reporting of a T&D Wires Down metric, PG&E eliminated the metric from the STIP. According to PG&E, this was because California' drought had made benchmarking and target setting problematic. PG&E replaced T&D Wires Down with an Electric Overhead Conductor Index. The Electric Overhead Conductor Index includes three equally weighted metrics: 1) electric distribution infrared inspections; 2) electric distribution conductor upgrades and 3) T&D vegetation management Public Safety and Reliability Program (PS&R). This metric cannot be benchmarked.
    - PG&E eliminated the LWD metric due to OSHA requirements, and replaced it with a SIF Corrective Action Index. The SIF Corrective Action Index is based on two equally weighted measures: 1) Quality of corrective actions and 2) Timely completion of corrective actions. The quality of corrective actions is to be determined by a third party, to minimize subjectivity. Effectiveness of corrective actions is not part of the index.
    - Revised the DCCP Reliability and Safety Indicator to reflect industry 2020 goals.

[34] DR 006-CONFIDENTIAL, December 15, 2016 Compensation Committee Materials.

- Revised the Customer Satisfaction Score weighting to 60 percent residential/40 percent small and medium business.

- In 2017, PG&E changed the safety component of the LTIP from LWD to the effectiveness of SIF corrective actions.[35]

8. PG&E makes extensive use of benchmarking and targeted reviews to evaluate its performance and practices, identify opportunities for improvement and implement change.[36]

- Between 2010 and 2016, PG&E performed numerous benchmarking and best practices reviews. The studies were used to evaluate PG&E's performance and practices against industry peers and identify perceived weaknesses and areas for improvement:

  - In 2015, PG&E participated in a third-party utility Safety Benchmarking Survey.[37] The survey provided detailed information on employee safety performance; safety organization structure, reporting relationships, and staffing ratios; non-labor safety spending; safety communications and training; rewards and recognition programs; safety observation programs; injury and safety incident management; and, safety reporting.
  - PG&E is a member of the AGA and EEI, thus providing it with access to safety statistics and comparative data. Comparisons include PMVI rates, LWD and other OSHA reporting.
  - PG&E benchmarks many of its STIP and other metrics against other utilities. Targets are frequently in the form of quartiles or deciles.[38]

- In addition to performing or participating in broad, data-based benchmarking, PG&E has conducted focused reviews of known or perceived leaders in corporate safety culture. Examples include.

  - In February 2012, PG&E Gas Operations met with Alaska Airlines to learn from the airline's turnaround after its 2000 crash. Topics covered included: Alaska Airline's daily operations call; the control room; contractor oversight and reporting; process compliance; data and metrics; governance, employee relations and other cultural takeaways.[39] The daily operations call was implemented in both gas and electric.
  - Prior to designing the new gas control center, PG&E met with Enbridge, Atmos and Northwest Natural.[40]
  - In 2013, PG&E evaluated the Corrective Action Programs used by DCPP (internal), Boeing and Idaho National Lab.[41]

[35] DR 006-CONFIDENTIAL, December 15, 2016 Compensation Committee Materials.
[36] The list is not intended to be comprehensive.
[37] DR 147 Attachment 001 - CONFIDENTIAL
[38] BPR Books
[39] DR 182 and DR 182 Attachment 001-CONFIDENTIAL
[40] DR 182, DR 182 Attachment 002

- Prior to implementing its contractor safety program, PG&E reviewed the practices of ABB, Black & Veatch, Dashiell, ARB, GE and Quanta. Areas evaluated included: how contractor safety is measured and monitored, feedback mechanisms and the identification of utilities that the entities felt have good safety programs.[42]

- PG&E and its employees are involved in a variety of trade associations and participate in industry conferences that allow it to exchange ideas and benchmark practices. These include: Interstate Natural Gas Association of America (INGAA), AGA, NACE International (formerly known as the National Association of Corrosion Engineers, API, American Society of Mechanical Engineers (ASME), Southern Gas Association (SGA), Western Energy Institute, Common Ground Alliance, Western Regional Gas, International Pipeline Conference and World Gas Conferences.[43]

9. PG&E does not adequately share internal best practices.

- Most cross-functional committees are at a high level and do not promote feedback from the rank and file to solve problems or identify potential solutions.

  - LOB committees and counsels include representation from field employees but these are frequently the same designated representatives, and the same individuals consistently appear on committees and task forces.
  - Broader representation across the workforce in various task forces and committees would promote a better exchange of ideas and allow individuals with more direct involvement to brief colleagues rather than the hierarchical "down briefing" that currently occurs.

- Recent analyses regarding LWDs indicate that some incidents could have been avoided with lessons learned sharing across the LOBs.[44]

- During the course of the review, NorthStar identified several process differences and shared this information with the LOBs.

D. RECOMMENDATIONS

Recommendations for PG&E

1. None of the KPIs currently considered for use in measuring safety culture should be included as an incentive measure (i.e., included as part of the STIP or LTIP). This will only serve to provide artificially inflated results or drive unintended consequences. Most of the proposed metrics are based on either employee surveys or near hit/CAP reporting. Incentives tied to employee submittals will ensure targets are met and may minimize the value of the submittals (for example, a sudden influx of not particularly meaningful

[41] DR 004 Attachment 001
[42] DR 049 Attachment 001
[43] DR 182
[44] DR 831

submittals prior to the end of a reporting period). Similarly, an incentive tied to survey results will drive positive reporting rather than true results.

2. Continue to track metrics eliminated from STIP as part of the BPR process to allow trending.

3. Increase the weighting of safety in the LTIP to more closely align safety performance and executive compensation.

4. Reevaluate the appropriateness of the Earning from Operations component of the STIP due to its lack of transparency and the ongoing adjustments for Items Impacting Comparability.

5. Revisit all STIP metrics and targets in light of the enterprise-wide safety plan recommended by NorthStar. Set multi-year targets to drive performance. Include a contractor safety metric in the STIP. Following the development of the enterprise safety plan, PG&E should develop STIP and BPR metrics that measure plan implementation/ adoption and the effectiveness of the various initiatives identified in the plan. PG&E should continue monitor and report lagging OSHA metrics (i.e., DART, LWD, MVIs, fatalities) as part of the BPR process.

6. Develop a more robust and comprehensive set of BPR metrics addressing all aspects of safety such as public, employee and contractor safety; facility, infrastructure/asset and cyber security; environmental safety; public awareness; and, safety culture.

7. Improve the internal sharing of best practices. Increase the level of involvement by different groups and employee levels. As an example, NorthStar performed a management audit of National Grid Gas' NY operations a few years ago for the New York Public Service Commission. The utility had a fairly robust process improvement program. NorthStar's report describing the process is available on the New York State Department of Public Service's website.

Recommendations for the Commission

1. Assess the effectiveness of the newly introduced 2017 STIP and LTIP metrics.

2. Eliminate penalties for self-reporting of safety-related incidents by the California utilities; instead, implement a system that encourages reporting of actual and potential safety incidents to be shared among the utilities in order to identify best practices and share lessons learned. Actual incidents should be reported, as well as near hits. The CPUC should work with the California IOUs to define the parameters of near hit reporting. The system should be open to municipalities to encourage lessons learned sharing across the state.

3. Working with all California IOUs, develop a listing and consistent definitions of key safety-related metrics and other information to be tracked on a monthly basis and reported to the CPUC at an agreed upon frequency. Performance reporting should be handled in a non-punitive manner, but subject to audit by the CPUC. On an annual basis,

each utility's Internal Audit function should audit and render an opinion as to the accuracy of the information reported to the CPUC.

4. Consider the implementation of a performance-based ratemaking mechanism with a fixed component based on traditional ratemaking principles and a variable adder based on safety performance. Both components should have defined ranges. Safety performance can be defined in a variety of ways. As with any incentive mechanism, the potential for gaming is real. NorthStar's recommendations to PG&E, includes items that should provide a greater tie between safety performance and executive compensation.

    - NorthStar has recommended that PG&E reevaluate the appropriateness of the Earnings from Operations component of the STIP due to its lack of transparency and the ongoing adjustments for Items Impacting Comparability.
    - NorthStar recommends that PG&E increase the weighting of safety in the LTIP to more closely align safety performance and executive compensation. For a Named Executive Officer, the amount of compensation tied to safety performance through the STIP and LTIP is roughly eleven percent of the amount of total compensation awarded in a given year assuming stock prices remain at the assumed level and the Total Shareholder Return over the next three years is at target.
    - Increasing the proportion of LTIP meaningfully tied to safety-performance over a three-year horizon, may increase the tie between safety and compensation at the executive level. The design of this or a clawback mechanism would need to be carefully constructed to provide a reasonable likelihood of achieving the goal.
    - Consideration could also then be given to providing the Compensation Committee with similar authority over the granting of the safety portion of the LTIP – similar to the discretion it has over the STIP.